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IS 10642 (1983): General guidelines for consumer sensory evaluation of foods and beverages [FAD 14: Drinks and Carbonated Beverages]

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“Knowledge is such a treasure which cannot be stolen”



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Indian Standard

GENERAL GUIDELINES FOR CONSUMER SENSORY EVALUATION OF FOODS AND BEVERAGES

UDC 663/664 : 543.92 (026)



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INDIAN STANDARDS INSTITUTION
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NEW DELHI 110002

Indian Standard

**GENERAL GUIDELINES FOR
CONSUMER SENSORY EVALUATION OF
FOODS AND BEVERAGES**

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*Dr. G. Sadasivan was the Chairman elected for the meeting in which this standard was finalized.

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Indian Standard

GENERAL GUIDELINES FOR CONSUMER SENSORY EVALUATION OF FOODS AND BEVERAGES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 30 August 1983, after the draft finalized by the Sensory Evaluation Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Most of consumer products in general and specially foods are produced to satisfy consumer needs and specifications. Therefore, there is a need for ascertaining the degree of satisfaction of consumer with a product. The methods of assessment known as the consumer sensory evaluation or consumer test in the food field should be designed to get a realistic picture of consumer reaction expectation and is essential before the final or national test marketing, can be taken up with confidence.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes guidelines for consumer testing of foods and beverages in general. It is expected to provide an insight into consumer reactions, expectations and market potentials with regard to the product under study.

NOTE — These guidelines will have to be tailored to the individual objective of enquiry and type of product.

*Rules for rounding off numerical values (*revised*).

2. TERMINOLOGY

2.0 For the purpose of this standard the following definitions shall apply.

2.1 Consumer Sensory Evaluation/Consumer Test — is a planned research study in which consumers are asked to evaluate the product for acceptance optimum quality or desired quality variation. Consumers are current or potential users of a product or of a proposed product (target population).

2.2 Focus Group — consists of representatives of typical consumers who are trend setters and leaders of specific population groups who can define and describe the sensory responses to a prototype or production sample on changes for improvement as well as project concept for newer desirable products for future.

2.3 Central Location Tests — are an extension of small scale acceptance preference tests in lesser time and expense.

2.4 In-home tests are testing the product in the homes of the consumers under normal or near-normal family use conditions.

3. PRINCIPLE

3.1 Consumer tests, to be most effective should be based on a systems approach. In a product development system the consumer concepts of a product in the beginning and consumer reaction to the product at the end are very important and are directly based on consumer tests. The building of the R & D prototype is mainly based on laboratory sensory evaluation or trained panel evaluations and require to be related to consumer concept and consumer response at appropriate stages.

Decisions on future direction of product development efforts are often based on consumer tests. Hence it is important that these tests should be conducted by adequate and standardized methods for full and meaningful utilization of their results.

4. METHODS

4.1 Concept Identification — The concept of individual foods required by the consumer, feasibility studies on a product achieving sensory reality, improvements or modifications to be made to existing foods, checking on marketing groups projection and management desires are necessary for concept identification. These are to be undertaken by a survey of focus groups of consumers who are trend setters, innovators, outgoing and capable of communicating ideas.

A clear understanding of the product's concept, requirements and the origin of those requirements should be obtained in this study on the following lines.

4.2 Concept Viability — This assesses consumer interest, intent to purchase, expected frequency of use, etc, about the product. The information is used to determine whether the concept is worth further expenditure in terms of development. This type of enquiry is familiar in marketing studies.

4.3 Consumer's Ideal Product Concept Identification — Concept generation and refinement with a clear and concise description of the proposed product in terms of its sensory and functional properties is carried out with focus groups. Sensory attribute descriptions should be precise and concrete like sweet, bitter, tough, mushy, viscous, etc. They should not be vague and conceptual like soft texture, rich taste, natural flavour, etc. The focus group could be introduced in a preliminary session to the precise terms and meanings before the regular tests are started.

4.4 Product development/modification is carried out in the laboratory and sensory quality attributes checked by laboratory panel trained for evaluation (IS : 8140-1976*) for consumer product concept conformity, shelf-life and packaging parameters.

4.5 Consumer testing requires careful planning based on well defined objectives to yield reliable and valid information of importance.

4.6 The methodology to be followed in conducting a meaningful consumer test is as follows:

- a) *Definition of the clear objectives* — A clear statement of specifications and objectives based on the consumer concepts defined by focus group is formulated. The objective should necessarily be the assessment of consumer reaction/preference with respect to product development, reformulation and ingredient replacement which should be clearly spelt out before starting the study.
- b) *Identification of Target Population* — To obtain valid results and generalize them with greater confidence identification of target population based on the product and the objective is critical. The choice is made based on apriori information available such as food habits, ethnic groups, income groups, sales information of a similar product, etc. If no such information is available, alternative sampling procedures based on general sampling principles are to be made use of. Periodic updating is necessary to account for shifts in consumer attitudes.

*Guide for selection of panel for sensory evaluation of foods and beverages.

5. PERIOD OF STUDY

5.1 The study should be conducted within a stipulated fixed time interval which is decided based on constraints of resources (time and money) of testing, test method season and so on.

6. REPRESENTATIVE SAMPLE PREPARATION

6.1 It is necessary to make sure that the test samples are truly representative and batch to batch variation is minimum. Consumer tests should be done with sample turned out under typical production conditions or at least on pilot scale; but not on samples from laboratory scale. The samples are to be evaluated under reasonably representative conditions of normal consumption pattern which can never be achieved under laboratory scale or central location tests.

7. TEST PROCEDURES

7.1 Initial focus group tests are conducted as concept rating tests with prototype products produced on a small scale.

7.2 A variety of approaches are in vogue in consumer product testing which have to be chosen individually and adjusted to particular problems and situations. The most popular are central location and home-use or in-house testing procedures. Central location tests are conducted in one or two limited centres. They are ideal with respect to sample preparation, screening procedures, questionnaire design, tryout of data analysis, psychological environment, instructions, freedom from interferences and possible discussion of vague answers given. The primary difference from laboratory tests is related to the respondents. The number of respondents in this case is large (> 100), usually several hundreds and they are users of the product type but not trained specially for product or methods.

7.3 There are two common procedures used to recruit panelists for testing — intercept and pre-recruitment. Intercept is done in shopping malls, stores, public gatherings, etc, where a large number of appropriate consumers, representative of target population are expected. Samples and questions should be kept few in number for such tests.

7.4 Pre-recruitment through groups, clubs, telephone surveys and advertisements are used to reach the identified target population. Testing is done in few locations where arrangements can be made for establishing satisfactory testing facilities.

7.5 The central location testing is a valuable link between the sensory evaluation laboratory and consumer testing. This desired continuity should be maintained taking care not to introduce contradicting factors in the test.

Home-use tests enable the product to be tested under near-normal conditions. The survey of the area, door to door, to establish background and qualification of the panelist is done and the recruitment is made on the spot. Samples along with instructions cards are personally delivered or sent by post and the appointment for return of the card fixed. The method is effective in obtaining high percentage of response and possibility of clearing up vague answers exist but is expensive in terms of cost for repeated visits.

Telephone and mailed product and questionnaire are substituted for personal contact. But it is harder to obtain significant co-operation from the subjects within a stipulated time.

8. QUESTIONNAIRE DRAFTING

8.1 The questionnaire is prepared based on the objective and the design of the study. It is screened with few test subjects for clarity and possible completion in reasonable time for a test. Care should be taken to see that the questionnaire is not very long and confusing. The most important questions are asked first to avoid the bias due to boredom and other environmental and psychological factors.

Pretesting for understanding of the sample presentation and testing instructions of samples and questionnaire is done in a complete briefing programme and general information on the project that can be safely divulged is decided. Pretesting is normally done with select groups of 15-20 subjects to ensure uniform conditions of testing.

9. SAMPLING

9.1 Number of Samples to be Tested

9.1.1 More than 3 samples should not be tested in a single sitting by consumers. Consumers are generally good at relative judgements but are very poor at absolute judgements. Hence including a reference sample along with one or two experimental samples will be the most effective. Single sample that is monadic tests no doubt simplify the experimental design; but are not as efficient as two or three sample tests since each of the consumers will have his own concepts of the qualities for fair or good product with which he compares any single sample presented to him. Increasing the number of samples beyond 3 is also not advisable as it will create more confusion from sensory fatigue to subjects, necessitate increase in the number of consumers required for testing and induce complexity of design.

9.1.2 *Number of Responses per Sample* — to be collected depends on the specific sensory attribute being evaluated, representativeness of the panels selected, type of information desired, experimental design used and available budget. Usually consumer tests are not done for less than

100 independent responses per product; the number may be as large as 500 depending on the importance of the product and the attribute being evaluated.

- **9.1.3 Sample Coding** — normally accepted three digit coding procedures should be used as far as possible. Random letter coding can be done where the design is simple and large samples are involved.

10. DATA ANALYSIS AND PROCESSsing

- 10.1** They are fixed prior to the start of the testing programme in consultation with specialists, statisticians and data processors.

The reporting schedule should include:

- a) objectives,
- b) population and sampling details,
- c) test methods,
- d) analysis and interpretation, and
- e) recommendations.

11. REPORT

- 11.1** The report shall include general observations and any problems, encountered that are to be taken care of in such studies at later dates.